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Title: Chemical composition and anti-diabetic properties of Cytisus multiflorus

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Bakground and aims: The interest on plants with potential medicinal properties has been increasing worldwide. In the Iberian Peninsula there are some endemic species known by the population for their pharmacologic activity with valorization potential that have not been yet characterized. The white Spanish broom (*Cytisus multiflorus*) is described as having anti-diabetic effect [1] and in a preliminary the hypoglycemic and hyper-insulinemic effect of an aqueous extract has been shown [2]. The aim of this work was to fractionate and analyse the composition of the aqueous extract of *C. multiflorus* flowering parts and evaluate its potential as an anti-diabetic agent.

Materials and methods: The aqueous extract was primarily fractionated by SPE using water:methanol (W:Me) eluent (a 10% step-wise gradient W:Me from 100:0 to 0:100) followed by high performance liquid chromatography with diode array detector (HPLC-DAD). The most relevant fraction were analysed by LC-MS to determine the chemical composition. Total fenol content was determined by a modified Folin-Ciocalteau method and the anti-oxidant activity was evaluated by the DPPH mehod. Finally, the hipoglicemic potential was evaluated *in vivo* using glucose intolerant rats (GIR).

Results: Eleven fractions of the bulk extract were obtained. Seven of these fractions (10, 30, 40, 50, 60, 70 e 80% Me) were found to have a relevant compounds, mostly flavonoid compounds, namely, rutin (50, 60 and 70% Me fractions), ferrulic acid (30% Me), referred as having hypoglicemic effect. The fractions obtained with 50 and 70% Me showed the highest content in phenol equivalents and the highest anti-oxidant effect were found in the 50 and 60% Me fractions. The 30 and 60% Me fraction had no effect on the post-prandial glicemia.

Conclusions: The 30, 50, 60 and 70% Me fractions, due to their chemical composition and anti-oxidant effects were the most promising to have anti-diabetic effect. However, the 30 and 60% Me were found to be ineffective. The 50% Me fraction showed both a high content of flavonoid compounds and the highest anti-oxidant power which suggest that it may constitute the most promising one. The anti-diabetic properties of this fraction should be investigated.

[1] Camejo-Rodrigues J. et al. (2003). *J. Ethnopharmacol*, 89, 199-209
[2] Célia M. Antunes, Laurinda R. Areias, Inês P. Vieira, Ana C. Costa, M. Teresa Tinoco, & Júlio Cruz-Morais (2009). Rev. Fitoterapia 9 (Supl.1): 91.

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